

Practice Problems – Energy

Energy formulas: $KE =$ $PE =$ $ME =$

Hint: Assume $g = 10 \text{ m/s}^2$ for this entire WKST

1 – What is the kinetic energy of a baseball moving at a velocity of 40 m/s if the baseball has a mass of 0.15 kg?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

2 – A car moving at a velocity of 20 m/s has a kinetic energy of 300,000 J. What is the car's mass?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

3 – A sprinter has a mass of 80 kg & a kinetic energy of 4,000 J. What is the sprinter's velocity?

GIVEN:	WORK:
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	ANSWER:

4 – Find the height of a baseball with a mass of 0.15 kg that has a GPE of 73.5 J.

GIVEN:	WORK:
FORMULA:	
	ANSWER:

Name _____

5 – Find the GPE of a coffee mug with a mass of 0.3 kg on a counter 1 m high.

GIVEN:	WORK:
FORMULA:	ANSWER:

6 – What is the mass of a hiker 200 m above the ground if her GPE is 117,600 J?

GIVEN:	WORK:
FORMULA:	ANSWER:

7 – What is the kinetic energy of a ball with a mass of 0.06 kg moving at 50 m/s?

GIVEN:	WORK:
FORMULA:	ANSWER:

8 – An 80 kg diver jumps from a 10 m high platform. What is the GPE energy of the diver halfway down?

GIVEN:	WORK:
FORMULA:	ANSWER:

9 – Explain whether an object can have kinetic energy & potential energy at the same time.

10 – Explain how the kinetic energy of a truck can be increased without increasing the truck's speed.

11 – What is the kinetic energy of a 5 kg object moving at 7 m/s?

GIVEN:	WORK:
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	ANSWER:

12 – An object has a kinetic energy of 600 J & a velocity of 10 m/s. What is the object's mass?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

13 – A 0.4 kg ball has a kinetic energy of 80 J. What is the ball's velocity?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

14 – A car has a mass of 900 kg & is traveling at 25 m/s. What is the car's kinetic energy?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

15 – An object has a mass of 80 kg & is on a platform 3 m above the ground. What is its GPE?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

Name _____

16 – A person has a GPE of 10,000 J & a weight of 500 N. How high above the floor are they?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

17 – What is the GPE of a diver with a mass of 60 kg who is on a board 10 m high?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

18 – A 2 kg book is moved from a shelf that is 2 m high to a shelf that is 1.5 m high. What is its change in GPE?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

19 – A rollercoaster moving around a turn has a kinetic energy of 23,000 J & a gravitational potential energy of 100,000 J. What is its mechanical energy?

GIVEN:	WORK:
FORMULA:	
	ANSWER:

A system has a total mechanical energy of 350 J & kinetic energy of 220 J. What is its potential energy?

GIVEN:	WORK:
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GIVEN:	WORK:
	ANSWER:

- At the top of a hill, a rollercoaster has 67,500 J of kinetic energy & 290,000 J of gravitational potential energy. Gradually the rollercoaster comes to a stop due to friction. If the coaster has 30,000 J of potential energy when it stops, how much energy is converted to heat energy through friction?

GIVEN:	WORK:
FORMULA:	ANSWER: